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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,625

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Jaroslav Wosik

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3541

23873 7590 11/12/2008  
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EXAMINER

FETZNER, TIFFANY A

ART UNIT

PAPER NUMBER

2831

MAIL DATE

DELIVERY MODE

11/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,625	<b>Applicant(s)</b> WOSIK, JAROSLAW	
	<b>Examiner</b> Tiffany A. Fetzner	<b>Art Unit</b> 2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/20/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☒ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/20/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

1. The examiner noticed that applicant has filed a request to 371 priority from a PCT application. The PCT application also claims priority of the US provisional application 60/537,782, filed January 20, 2004. **The examiner notes that the data provided by applicant for priority is not consistent with PTO records.**
2. While the examiner can verify the validity of the provisional US application, the applicant provided PCT application number for priority does not match The PCT application number submitted with the instant application. The PCT associated with US provisional application number 60/537,782 is different than the serial number of the PCT provided by the applicant in the continuation data of the instant application. Applicant is required to take whatever steps are necessary in order to perfect the claim for priority. Potential corrective actions may include any of the following: a new oath/declaration, an amended priority paragraph at the beginning of applicants' written description within the specification of the instant application, and/or Payment of all required fees.
3. The actual PCT application number associated with US provisional application number **60/537,782** is **PCT / US2005 / 001813** which is different than the PCT application number provided in applicant's original specification, oath declaration and Disclosure.

### *Information Disclosure Statement*

4. The information disclosure statement(s) (IDS)'s submitted on **June 20th 2006** is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement. The initialed and dated information disclosure statement (IDS) submitted on **June 20th 2006** is attached to this Office action.

### *Drawings*

5. The drawings are objected to because there are stray copy marks and blurriness throughout applicants originally filed figures.[2a, 2b, 5a, 5b, 5c, 5d, 5e, 6a, 6b, 7a, 7b, 8b, 11a, 11b, 11c, 11d, 12a, and 12d] each of these figures needs to be cleaned up so that the images can be reproduced properly and that all the words on these images

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become legible. Illegible elements in figures is improper and must be corrected. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections Scope of claims unclear***

6. **Claims 41 and 42 are** objected to because of the following informalities:

**A)** these two claims have numerous inconsistencies with respect to singular versus plural tense. It is unclear whether applicants claim is referring to one animal more than one animal, more than one reservoir a single reservoir, etc.

**B)** In both claims 41 and 42. The adaptation which applicant has made to the cylindrical cavity is undefined. When the words "adapted to" are in a claim the adaptation made must be set forth. A possible solution to this error is to use the word "configured" Instead.

**C)** With respect to **Claim 41**, " A small animal MRI apparatus comprising: a vacuum housing including **at least one cylindrical cavity adapted to** receive **a small animal**, a coolant reservoir including a coolant, a coolant inlet, a coolant outlet and a cold plate forming an internal end of the reservoir, a resonator surrounding **each cavity** (singular) to permit MRI imaging of **an animal in each of the cavities** (**plural** this implies there must be at least two cavities present, as opposed to the case of being able to have only

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one cavity present), where the resonator comprises: a **plurality of coils apparatus** ["a plurality of coils apparatus" does not make logical sense grammatically. The examiner suggests "**a plurality of coils in an MRI apparatus**" including: four members, each member including a superconducting layer, where the members arranged to form a closed shape having four overlapping regions, and separating dielectric layers interposed between the superconducting layers at the overlapping regions to form built-in capacitors, and **at least one small animal cavity**, [is unclear why the one small animal cavity is being defined again] where the coil apparatus **is** are? (Singular versus plural inconsistency) arranged around the cavity to permit MRI imaging of **an animal** [single versus plural inconsistency again] placed within the cavity.

**D)** With respect to **Claim 42**, "A small animal MRI apparatus comprising: a vacuum housing including **at least one** cylindrical cavity **adapted to receive a small animal**, a coolant reservoir including a coolant, a coolant inlet, a coolant outlet and a cold plate forming an internal end of the reservoir, a plurality of coils positioned within the housing to permit MRI imaging of **an animal in each of the cavities**, where **the each coil** comprises: four members, each member including a superconducting layer, where the members are arranged to form a closed shape having four overlapping regions, and separating dielectric layers interposed between the superconducting layers at the overlapping regions to form built-in capacitors". The examiner notes that the main confusion of claim 42 is whether or not, there is one or more animals and one or more reservoirs present within this claim.

7. The examiner notes that when there is only one animal, and one reservoir than the applied prior art of record, of **Wong et al.**, US patent **6,377,047 B1** issued **April 23, 2002**, filed June 8, 2000 would also apply to claim 42, would be applicable under **35 USC 103(A)** since a small human is an animal and all superconductive MRI Magnet apparatuses intrinsically comprise a vacuum housing including **at least one** cylindrical cavity configured **to receive a small animal**, with a coolant reservoir including a coolant, a coolant inlet, a coolant outlet and a cold plate forming an internal end of the reservoir, because they are superconductive MRI magnet systems. Additionally, it is

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readily obvious to one of ordinary skill in the art to use a superconductive RF coil in combination with a superconductive MRI magnet system.

8. The applied prior art below concerns and RF coil array specifically, but it would also be readily obvious to one of ordinary skill in the art, in the situation with one animal being imaged and one reservoir, to utilize the taught RF coil in a superconductive MRI magnet system since the temperature of operation is easy to match, and using a superconductive coil array in a superconductive MRI magnet makes logical sense for efficiency. Therefore even if applicant corrects claim 42 to properly require only one animal and one reservoir claim 42. This claim would still its self still be met by the **Wong et al.**, prior art of record as currently set forth. The examiner notes, that the applied prior or does not perform simultaneous / concurrent imaging on two different animals, nor does the applied prior of record contain a plurality of separate reservoirs for conducting parallel or successive imaging on multiple animal's. It is because the scope is unclear with respect to the number of animals and reservoirs in claim 42, which applicant claims at the present time that the applied prior art of record is not being applied at the moment. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 41 and 42** are rejected under **35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. [See the Detailed explanations and the objections above, where the numerous grammatical issues, and singular versus plural inconsistencies, create a problem with the claimed scope of these claims, and the examiner cannot determine what the actual structure is that is being recited.]

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. **Claims 1-40 are** rejected under **35 U.S.C. 102(b)** as being anticipated by **Wong et al.**, US patent **6,377,047 B1** issued **April 23, 2002**, filed June 8, 2000.

13. With respect to **Claim 1, Wong et al.**, teaches and shows "An MRI coil apparatus" [See figures **1-13** ] comprising: four members, (i.e. composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, along with the two copper ring members identified as component 12, composite strips are mounted periodically.) "each member including a superconducting layer" or junction,(i.e. see the HTS superconducting layer components 141' 241, 341, of figures 2 through 13) "where the members" (i.e. composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11) "are arranged to form a closed shape" (i.e. a superconducting birdcage coil as shown in the combination of figures 2, 4, 6, 8, 12 and 13) "having" at least "four overlapping regions", [see figures 12, 13, 8, 6, 5, 3, and of course figure 2.] "and separating dielectric layers interposed between the superconducting layers at the overlapping regions to form built-in capacitors." [See figures 2, 3, 5, 6, 8, 11, and 12; along with the teachings of column 1, line 44 through column 7, line 29.]

14. With respect to **Claim 11, Wong et al.**, teaches and shows "**A hybrid MRI coil apparatus comprising:**" at least "two superconducting members", (i.e. see the HTS superconducting layer components 141' 241, 341, of figures 2 through 13) "each member including a superconducting layer, two metal member" (i.e. a protective layer of gold (Au) and/or silver (Ag) components to 243 143' 143), "and separating dielectric layers" (i.e. the dielectric substrate layers 142, 242 or 342, of figures 2 through 13) "where the superconducting members and the metal member are arranged to form a closed shape" (i.e. such as the superconducting birdcage coil of figure 2) "having" at least "four overlapping regions and the separating dielectric layers are interposed between the superconducting layers." [See figures 2, 3, 4, 5, 6, 8, 11, 12 and 13; along with the teachings of column 1, line 44 through column 7, line 29.]

15. With respect to **Claim 21, Wong et al.**, teaches and shows "A birdcage-type resonator apparatus" [See figure 2 and the teachings of column 1 line 44 through column 7 line 29.] "comprising: a plurality of coils apparatus including": at least "four" strip shaped "members, each member including a superconducting layer, where the members are arranged to form a closed shape having four overlapping regions, and separating dielectric layers interposed between the superconducting layers at the overlapping regions to form built-in capacitors" [See figures 2 through 13, the teachings of column 1, line 44 through column 7 line 29, along with the rejections of claims one and 11 which need not be reiterated.] Additionally, because human beings are in fact, members of the animal kingdom, along with smaller animals such as mice, rats, kittens puppies etc. and because RF birdcage coils can be made of a size to surround the animal to be imaged in an MR imaging environment. **Wong et al.**, also teaches and shows that the RF birdcage type resonator, which is taught and shown in figure 2; sickly possesses and defines "at least one small animal cavity, where the coil apparatus(es) is/are arranged around the cavity" in order "to permit MRI imaging of an animal" or a portion of an animal "placed within the cavity" (i.e. where the animal or a portion of the animal is located inside the imaging region of the birdcage coil). The Examiner notes that in the case of human beings birdcage coils are often/conventionally used in head imaging and in imaging of the extremities such as arms and legs or in some cases to image just around the torso of a human being which is undergoing MRI imaging.

16. With respect to **Claim 31, Wong et al.**, teaches and shows "A birdcage-type resonator apparatus" [See figure 2] comprising: a plurality of coils apparatus including": at least "two superconducting members, each member including a superconducting layer, two metal member, and separating dielectric layers, and at least one small animal cavity, where the coil apparatus are arranged around the cavity to permit MRI imaging of an animal placed within the cavity and where the superconducting members and the metal member are arranged to form a closed shape having four overlapping regions and the separating dielectric layers are interposed between the superconducting layers and the metal members at the overlapping regions to form built-in capacitors." [See the rejections of claims 1,11, and 21 along with the teachings of the abstract, column 1, line



44 through column 7 line 29; figures 2 through 13 and their associated written description.]

17. With respect to **corresponding claims 2, 12, 22 and 32 Wong et al.**, teaches and shows "wherein each member" (i.e. composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11) "comprises a substrate dielectric layer" (i.e. such as the sapphire substrate dielectric layer 2142 242, 342) "upon which the superconducting" (i.e. the HTS) "layer was formed". [See the abstract, column 3, line 55 through column 4 line 67.] The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 2, 12, 22, 32** and need not be reiterated.

18. With respect to **corresponding claims 3, 13, 23 and 33 Wong et al.**, shows some configurations "wherein the substrate dielectric layers are rigid" with the HTS dielectric layer entirely covering the substrate, as in figures 3, 5 and 6. The same reasons for rejection, which apply to **claims 1, 2, 11, 12, 21, 22, 31, 32** also apply to **claims 3, 13, 23, 33** and need not be reiterated.

19. With respect to **corresponding claims 4, 14, 24 and 34 Wong et al.**, shows some configurations "wherein two of the substrate dielectric layers are rigid and two of the substrate dielectric layers are flexible" because in figures 8, 12, and 13. The substrate 142/342 is not completely covered by the HTS dielectric. There are gaps, a serpentine pattern along specific portions with rounded inner edges, and rectangular capacitive end areas which are tuned/just for the resonance desired, based on the layout of the HTS pattern. [See the detailed explanatory teachings of column 1 line 44 through column 7 line 29 ] The same reasons for rejection, which apply to **claims 1, 2, 11, 12, 21, 22, 31, 32** also apply to **claims 4, 14, 24, 34** and need not be reiterated.

20. With respect to **corresponding claims 5, 15, 25 and 35 Wong et al.**, shows wherein the members are straight. (i.e. see the straight rectangular composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11) The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 5, 15, 25, 35** and need not be reiterated.

21. With respect to **corresponding claims 6,16, 26 and 36 Wong et al.**, shows “wherein two of the members are straight and two of the members are curvilinear. (i.e. see the straight rectangular composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11; as well as the two curvilinear ring member components 12, which join the composite strip components at the periodic junctions) The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 6, 16, 26, 36** and need not be reiterated.

22. With respect to **corresponding claims 7,17, 27 and 36 Wong et al.**, shows wherein at least “two of the members are straight and two of the members are arcuate” [(i.e. see the straight rectangular composite strip components 14, 24, 34, of figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11; as well as the two arcuate member components 12, which join the composite strip components at the periodic junctions). The Examiner notes that a ring is intrinsically both arcuate and curvilinear in form. Additionally further arcuate shaped components are also shown as being defined by the serpentine pattern and the arcuate rounded inner edges of component numbers 341c, 341b of figures 8, 12]. The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 7, 17, 27, 37** and need not be reiterated.

23. With respect to **corresponding claims 8,18, 28 and 38 Wong et al.**, shows “that the substrate dielectric layers are the separating dielectric layers.” [See figures 12,13, 6, 5, and 3] The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 8, 18, 28, 38** and need not be reiterated.

24. With respect to **corresponding claims 9,19, 29 and 39 Wong et al.**, shows “a metal layer formed on an exposed portion of a dielectric layer or an external dielectric layer formed form on an exposed portion of a superconducting layer with a metal layer formed on the outer surface of the external dielectric layer to form coupling or decoupling capacitive elements.” [See figure 8, with respect to the capacitive end area 341a, the junctions where copper ring component 12 connects to the strips of applicants invention as in figure 13 and figure 12, additionally see figures 2, 3, 5, and 6 along with

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the teachings of column 1, line 44 through column 7 line 29 because the ability to make superconductive built in capacitors is the key novelty of the invention of the **Wong et al.**, reference.] The same reasons for rejection, which apply to **claims 1, 11, 21, 31** also apply to **claims 9, 19, 29, 39** and need not be reiterated.

25. With respect to **corresponding claims 10, 20, 30** and **40 Wong et al.**, teaches that electrically conductive ring 12 is made from copper [See col. 3 lines 43 to 47.] component 12 is also represented in wire form from figures 1a and 1b, therefore component 12 is also broadly interpreted by the examiner as a ring of copper wire. **Wong et al.**, teaches that the at the point where component 12 contacts the comprehensive strips taught throughout the reference, a thin film of electrode is formed, therefore the electrical ring of copper wire 12, bonds to the protective metal layers of silver Ag, or gold Au on the comprehensive strips (i.e. components 14, 24, 34), forming an array of connected strips in the form of a birdcage coil. [See the abstract column 1, line 44 through column 7 line 29 and figures 1 through 13.] Therefore **Wong et al.**, teaches applicants '**corresponding claims 10, 20, 30** and **40** where the apparatus further comprises "wires bonded to the metal layers", (i.e. the copper connected to the silver or gold metal portions) "where the metal wires are adapted to link a plurality of the apparatus together to form arrays **or** to connect the apparatus to a pre-amplifier." [See the array of comprehensive superconductive strips the built-in capacitor elements that define the **Wong et al.**, birdcage coil.] The same reasons for rejection, which apply to **claims 1, 9, 11, 19, 21, 29, 31, 39** also apply to **claims 10, 20, 30** and **40** and need not be reiterated.

### Conclusion

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday, Wednesday, and Friday-Thursday from 7:00am to 2:10 pm., and on Tuesday and Thursday from 7:00am to 5:30pm.

27. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Diego Gutierrez**, can be reached at (571) 272-2245. The **only official fax**

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**phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

28. Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TAF/  
November 12, 2008

**/Brij Shrivastav/**  
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